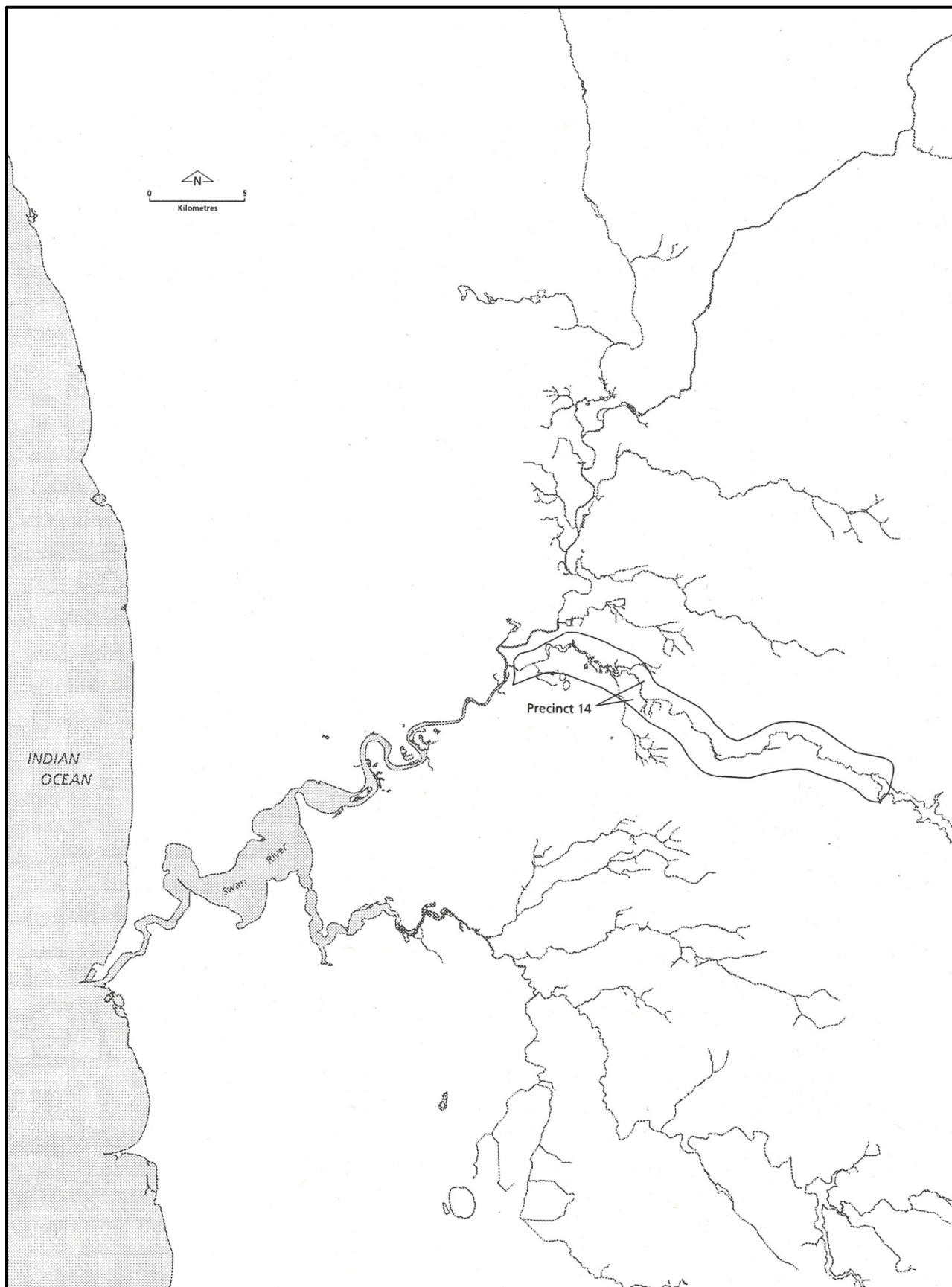


# Precinct 14

Helena River – Swan River Confluence to Mundaring Weir



# Summary

---

## Helena River – Swan River Confluence to Mundaring Weir

**The Helena River has been dammed at the Mundaring Weir to supply the Kalgoorlie water pipeline. In the summer months, the lower Helena River channel is reduced to a series of pools and exposed dry river bed. Often central islands of clay are exposed as the braided pools dry up.**

In summer, the river channel is only one to five metres across while in the winter months, the waters swell to fill the entire flood plain which at maximum is 100-200 metres across. Around the Hazelmere and Midland areas, several wetlands have formed adjacent to the river and are fed by both natural and artificial drainage lines. The granite outcrops which are characteristic of the Darling Range often cause small waterfalls and eddies created by the disturbance of the water over the protruding rocks. The Mundaring Weir is a spectacular water body which appears as a large, long and narrow lake which fills the Helena Valley up to the dam wall.

The Helena River passes through a range of landforms. At its confluence with the Swan River, the landform is a flat fluvial plain which grades into the gently undulating ancient dunes of the surrounding areas. At the base of the Darling Range are the lateritised foothills which form fans in front of the linear belt of lateritic uplands of the Darling Scarp. Along the lower Helena River much of the native vegetation has been removed for grazing and urban land uses. Remnant paperbark and sheoak communities line the Helena River and appear as a belt of green among the cleared pasture and industrial land. On the Ridge Hill Shelf, a greater proportion of the native flora remains. Marri, jarrah and wandoo are the dominant trees, however near the Mundaring Weir exotic gardens and pine plantations also occur. A range of land uses occur along the Helena River, including pastoral, industrial, recreational and residential land uses. The Mundaring Weir is the most spectacular land use in this precinct.

# Resource Information

---

## Biophysical Processes

### Geological Processes

The geological Cardup Group of dark shales with sandstone, conglomerate and orthoquartzite occurs along the Helena River between South Guildford to Belview (DCE, 1980). Small patches of Yoganup Formation occur at Helena Valley and Hazelmere. The fossil shoreline sands were formed in the Quaternary period and have some heavy minerals within the sands. The geology from Darlington to Mundaring is the Archaean formed granite. The granite boulders would be 2600- 2700 million years old. The isolated outcrops of quartz, feldspar and mica may possibly be older. The laterite at the summit of the hills has formed as the result of weathering from approximately 20 to 100 million years ago.

At the confluence of the Helena River with the Swan River, there are several soil types. The Swan alluvial terraces occur along the river banks between the confluence with the Swan River and the lower pipe head dam. The sediments are characterised by having red earths and duplex soils (DCE, 1980). At West Midland and East Guildford, the soil is classified as the Guildford Formation. It consists of yellow to brown silt with fine to coarse grained laterite, quartz sand and heavily weathered granite pebble. On the southern section of the river at Hazelmere and Helena Valley, the Southern River sand plains occur. In the swampy areas of this formation, iron and humus podzols, peats and clays can be found. At Koongamia and Helena Valley, the soil has been identified at the Forrestfield Association. These lateritised foothills of the Darling Scarp are dominated by gravelly and sandy soils. The Darling Scarp consists of very steep slopes with shallow red and yellow earths and much rock outcrop. From the lower pipehead dam to the Mundaring Weir the sediment is of the Helena Valley Association. It consists of steep rocky slopes and some shallow red or yellow earths. The lateritic uplands surround the Helena Valley Association and these consist of gravels, sands and duricrust.

### Topography

The topography of the Helena River precinct changes quite dramatically through the landscape. At the confluence of the Helena and Swan Rivers, fluvial flat plains occur. At the base of the Darling Range the lateritised foothills are found and are identified as being the Ridge Hill Shelf geomorphic unit. The Darling Plateau is made up of the lateritic uplands and the deep valleys and scarps. Massive granite boulders can be found jutting out from the hill slopes.

## Hydrological Processes

### Water features

The Helena River is a tributary of the Swan River and has a catchment area of around 65 kilometres from west to east and is about 40 kilometres from north to south. In the summer months the river dries to a series of pools or very narrow channel, while in winter the river is often full to the banks.

Several tributaries join the Helena River including Kadina Brook, Piesse Gully and Nyaania Creek. Numerous tributaries flow into the Mundaring Reservoir including Pickering Brook, Darkin River, Beraking Brook, Rushy Stream, Warin Brook, and Wundabiniring Brook.

Around the Darling Range section of the river several granite rocks jut out from the river channel creating small waterfalls and eddies in high flow periods. In low flow periods these rocks often act as barriers to the small flow and pools often form within the rocky channel.

### Bathymetry

The Helena River has a bathymetry which is mainly one to two metres. In the upper reaches the depth is quite shallow; however the surrounding river valley is often quite deep. For the lower section of the river there is limited tidal movement, while there is no tidal movement in the upper reaches.

### Flooding

The lower section of the Helena River is subject to quite substantial flooding. The flood line is at its widest east of Roe Highway Bridge where it reaches up to a kilometre in width. South of the Lower Diversion Dam the flood line is reduced to approximately 100-200 metres.

One of the most dramatic floods of the Helena River was in 1926 when the water reached a depth of 68 cm over the spillway of the Weir wall.

### Erosion and accretion

The fluvial deposits of the Helena River are the most susceptible to erosion by high water periods. The loose sediments are particularly subject to erosion in areas where the fringing vegetation has been degraded or removed. The shallow red and yellow earths typical of the Darling Scarp section of the Helena River are often eroded along the river channel and banks exposing the underlying granite on the banks.

## Vegetation Communities

### Native

#### Swan Complex

On the fluvial deposits of the lower Helena River, fringing woodland of flooded gum (*Eucalyptus rudis*) and swamp paperbark (*Melaleuca raphiophylla*) is found with localised occurrence of low open forest of swamp sheoak (*Casuarina obesa*) and salt water paperbark (*Melaleuca cuticularis*). At Hazelmere, moonah (*Melaleuca preissana*) and sheoak (*Allocasuarina fraseriana*) occur on the sandier soils.

#### Guildford Complex

The Guildford Complex mainly occurs on the higher land of the northern banks of the lower Helena River. A mixture of open forest to tall open forest of marri (*Eucalyptus calophylla*), wandoo (*Eucalyptus wandoo*) and jarrah (*Eucalyptus marginata*), rare occurrences of salmon white gum (*Eucalyptus lane-poolei*). Minor components include flooded gum (*Eucalyptus rudis*) and swamp paperbark (*Melaleuca raphiophylla*). Other plant species which are found in the complex include bull banksia (*Banksia grandis*), black gin (*Kingia australis*) and blackboy (*Xanthorrhoea preissii*) and native wisteria (*Hardenbergia comptoniana*) and buttercup (*Hibbertia* sp). Much of this complex has been cleared for pasture and more recently for urban land uses in this precinct.

#### Southern River Complex

The flora identified as Southern River Complex can be found on the flat aeolian sands of the lower Helena River. The open woodland consists of marri (*Eucalyptus calophylla*), jarrah (*Eucalyptus marginata*) and various banksia species (*Banksia attenuata* and *B. menziesii*). Often associated with this community is a fringing woodland of flooded gum (*Eucalyptus rudis*) and swamp paperbark (*Melaleuca raphiophylla*) along the creek beds and other drainage lines. The understorey would have contained coojong (*Acacia saligna*), grey stinkwood (*Jacksonia furcellata*), spearwood (*Kunzea ericifolia*), harsh hakea (*Hakea prostrata*), woolly bush (*Adenanthos cygnorum*), woody pear (*Xylomelum occidentale*), blackboy (*Xanthorrhoea preissii*) and zamia palms (*Macrozamia reidleyi*). Small shrubs found in the complex include prickly moses (*Acacia pulchella*), white myrtle (*Hypocalymma angustifolium*), Swan River myrtle (*Hypocalymma robustum*), common hovea (*Hovea trisperma*) and cotton heads (*Conostylis aculeata*).

#### Forrestfield Complex

Vegetation ranges from open forest of marri (*Eucalyptus calophylla*), wandoo (*Eucalyptus wandoo*) and jarrah (*Eucalyptus marginata*) which occur on the more gravelly soils to open forest of marri and jarrah with sheoak (*Allocasuarina fraseriana*), bull

banksia (*Banksia grandis*) and slender banksia (*Banksia attenuata*) on the sandier soils. Other species associated with the complex include woody pear (*Xylomelum occidentale*), parrot bush (*Dryandra sessilis*), zamia palm (*Macrozamia reidleyi*), blackboy (*Xanthorrhoea preissii*) and species of *Hibbertia*. On the sander soils Christmas tree (*Nuytsia floribunda*), semaphore sedge (*Mesomelaena tetragona*) and blueboy (*Stirlingia latifolia*) are also found.

#### Darling Scarp Complex

The vegetation which occurs on the Ridge Hill Shelf of the Helena River ranges from low open woodland to lichens according to the depth of the soil. Woodland components are chiefly wandoo (*Eucalyptus wandoo*) with Darling Range ghost gum (*Eucalyptus laeliae*) and marri (*Eucalyptus calophylla*) throughout the region. Other plant species which can be found at these sites are sheoak (*Allocasuarina huegeliana*), pincushion (*Borya nitida*), marble hakea (*Hakea incrassata*), narrow fruit hakea (*Hakea stenocarpa*), fuchsia grevillea (*Grevillea bipinnatifida*), goodenia (*Goodenia fasciculata*), and spindly grevillea (*Grevillea endlicherana*).

#### Helena Complex

In the valley sections between the lower pipe head dam to Mundaring Weir the Helena complex is dominant. This vegetation type has jarrah (*Eucalyptus marginata*), marri and jarrah (*Eucalyptus calophylla*) and open wandoo (*Eucalyptus wandoo*) woodland. It also includes areas of heath, herbland and lichens. Dominant vegetation types include jug flower (*Adenanthos barbigerus*), variable leafed hakea (*Hakea varia*), currant bush (*Leptomeria cunninghamii*), beard heath (*Leucopogon capitellatus*), hairy flag (*Patersonia rudis*), and common pin heath (*Styphelia tenuiflora*)

#### Murray and Bindoon Complex

The Murray and Bindoon Complex is represented at the Darlington valley floors. The vegetation type ranges from open forest to jarrah (*Eucalyptus marginata*), marri (*Eucalyptus calophylla*) with some Swan River blackbutt (*Eucalyptus patens*) to low open forest of flooded gum (*Eucalyptus rudis*) to swamp paperbark (*Melaleuca raphiophylla*) on the valley floors. Other plants include hairy gland flower (*Adenanthos barbigerus*), honey bush (*Hakea lissocarpa*), sword sedge (*Lepidosperma angustatum*) and common pin head (*Styphelia tenuiflora*).

#### Pindallup and Yarragil Complex

Open forest of jarrah (*Eucalyptus marginata*) to marri (*Eucalyptus calophylla*) is found on slopes and open woodland of wandoo (*Eucalyptus wandoo*) with some Swan River blackbutt (*Eucalyptus patens*) in the lower gullies (DCE, 1980). The shrubs in the complex include acacia (*Acacia browniana*), camphor

*myrtle* (*Baeckea camphorosmae*), *wing stemmed dampiera* (*Dampiera alata*), *grey parrot pea* (*Dillwynia cinerascens*), *York Road poison* (*Gastrolobium calycinum*), *honeybush* (*Hakea lissocarpa*), *candle hakea* (*Hakea ruscifolia*), *white myrtle* (*Hypocalymma angustifolium*), *sword sedge* (*Lepidosperma angustatum*), *currant bush* (*Leptomeria cunninghamii*), *zamia palm* (*Macrozamia riedlei*), *semaphore sedge* (*Mesomelaena tetragona*), *hairy flag* (*Patersonia rudis*), *globe pea* (*Sphaerolobium medium*), *blueboy* (*Stirlingia latifolia*), *hazel* (*Trymalium ledifolium*). *Particularly on the northern side of the Mundaring Dam the understorey includes fuchsia grevillea* (*Grevillea bipinnatifida*), *hibbertia* (*Hibbertia commutata*), *blackboys* (*Xanthorrhoea preissii*), *harsh hakea* (*Hakea prostrata*), *sedge* (*Tetraria octandra*), and *bunjong* (*Pimelea imbricata*).

### Exotic

Much of the lower Helena River area has been cleared for agricultural purposes. The result has been that exotic grasses such as kikuyu grass (*\*Pennisetum clandestinum*), couch grass (*\*Cynodon dactylon*), and subterranean clover (*\*Trifolium subterraneum*) have flourished. Other weeds include the castor oil bush (*\*Rhinus communis*), bulrush (*\*Typha orientalis*), blackberry (*\*Rubus* sp), Japanese pepper (*\*Schinus terebinthifolia*) and watsonia (*\*Watsonia bulbifera*). Several pockets of radiata pine (*\*Pinus radiata*) have been planted by the Department of Conservation and Land Management at Fred Jacoby Park, Paulls Valley and Hacketts Gully.

### Historical Land Use and Resulting Environmental Changes

Many of the early land assignments along the Helena River were made between 1829 and 1841. A rush of land seekers resulted in land being selected which had no qualities which would suit any agricultural purposes. Early settlers along the Helena River included W. Everard, P.A. Lantour, W.M. Carew, J.H. Monger, W.K. Shenton, Lord Talbot (Helena Location 20a) and James Drummond (Helena Location 17). Captain E Pickering was allocated a very rocky section along the Helena River and he quickly reselected new property on a creek now known as Pickering Brook which is outside of the study area.

In 1894, Lord Talbot's land was eventually sold to the Canning Jarrah Timber and Statham Quarries near Ridge Hill Road. The Canning Jarrah Timber company used the land to build a railway to their Canning saw mill (Quicke, undated).

In the 1890s, a second railway was built by Lionel White and company who had a licence to cut timber at Kalamunda (Quicke, undated). The line was cut in a three legged zig zag up a valley

face. The train would often have a passenger carriage in addition to the several timber carriages. In 1903, the government took over the line and a fourth leg was added to the track which later accessed the tea rooms of the Mundaring Reservoir. The track was later removed; however the zig zag pathway is still used as a recreational walking track.

By the early 1890s, the goldfields were desperately short of drinking water. This was a crisis not only to the people living in the area, but also threatened the wealth of the State which at this time had few known exploitable natural resources except gold. Trains provided gallons of water from Northam to Woolangie. Several proposals for pipe lines from tributaries to the Swan River were made including from the Avon River and Jane Brook. In March 1896, Sir John Forrest first informed the public that the government intended to supply the goldfields water from the Darling Ranges (WAWA, undated). The cost of the scheme seemed outrageous to many people and the exact location of the dam was not revealed until July 1896 when the Bill authorising the proposal was put to the Government Assembly.

In 1895, C Y O'Connor had been asked to produce a practical plan for pumping water to the goldfields. The task was enormous and involved building a railway to supply material to the site in the Helena Valley, a survey of the catchment area and clearing of the lower catchment area to increase the inflow. Excavation of the dam wall commenced in 1898. A fault in the bedrock of the valley caused considerable delay as this had to be excavated a couple of metres before reaching solid rock. Sand for the concrete was obtained approximately one and a half kilometres downstream from the dam site as well as from Lion Mill and Bayswater. The dam was constructed to be a 21 million cubic metre storage reservoir and the water was pumped to Kalgoorlie by 8 steam pumps when it was officially opened in 1903. By 1908 all the private properties at Byfield were resumed by the Crown as they were in the weir's catchment area (Quicke, undated). Since construction, electric stations have been constructed to replace the old steam stations and the main pipeline has upgraded to concrete lined with tar and aluminium with a zinc external lining.

A pine plantation is located at the Fred Jacoby Park. In 1913, the land owned by Fred Jacoby called Greystone was resumed by the Crown. The Forests Department planted the first radiata pine trees for harvesting at this time.

Midland Junction developed as a suburb of Guildford with the location of the government Midland Railway Company locomotive and railway carriage workshops.

At the turn of the century, extensive premises including administration buildings, running yards, engine sheds and workshop were located on 'a flat, swampy locality almost at the foot of the Darling Range' (Battye, 1912). The site has been used for painting, electroplating, diesel storage, and engine cleaning. In the 1970s, a waste water disposal pond and concrete floors were constructed on the site. The local council also supplied electricity and power to Guildford and surrounding areas. The residents mainly worked in the municipal and government workshops.

### Present Land Use and Social Patterns

Adjacent to the confluence of the Swan and Helena Rivers, there is a small section of residential land use. On the eastern side of Great Eastern Highway, retail outlets and some residential land use occurs. Several new developments have been built in the area, including Rosehill Park and Helena Valley developments. These developments were built on land which was originally cleared for grazing purposes and until recently remained as rural land use.

In between these urban developments, large rural blocks still occur such as along Queens Road West where the understorey has been cleared for grazing. A few flooded gums have been retained for shade while the understorey has been replaced by grasses and other exotics.

The land uses are varied on the fluvial plains and include a poultry farm along Queens Road West and the Men of Trees plant nursery at Stirling Road. The Westrail Workshops run parallel to the Helena River at Midland and several track lines run within the workshop area adjacent to the river. The rail line runs parallel to Great Eastern Highway and then heads in a northerly direction adjacent to Farrall Road.

Several schools are located along the river banks including the Guildford Primary School, Guildford Montessori School, West Midland Primary School, and Midland Christian School.

Some light industrial land use occurs along Bushmead Road. This includes skin drying sheds, stockyards, wholesalers, and scrap yards. Metrobrick is located on Military Road which is its main sales and distribution point. A rifle range occurs adjacent to Kadina Brook and an army training location is along Midland Road. There are several sand quarries which have mainly been abandoned or redeveloped for new land uses, such as golf courses and housing developments.

Much of Piesse Gully is set aside as State forest, while the remainder is used for orchards and cattle, sheep and horse grazing.

The Helena Valley Road closely follows the southern side of the river through the base of the Darling Range. A number of small rural properties are located between the road and the river, and a new subdivision is being developed. The road cannot be accessed by the public past the lower pipe head Dam. The Lower Helena pipe head dam is at the Darlington section of the river. The pipe head dam on the Helena River was constructed in 1971. It derives its water from the runoffs of the catchment between the dam and the Mundaring Weir. The water is pumped back into the upper Helena River Reservoir (WAWA, 1992).

The most spectacular land use in the precinct is the damming of the Helena River at the Mundaring Weir. The construction on the weir began in 1898 and the dam was officially opened in 1903. At the base of the weir, the old pump house has been converted to the museum. C. Y. O'Connor Memorial gardens are on the northern bank of the weir. The Mundaring Hotel and old hall are of historic interest to the area.

### Recreation Nodes

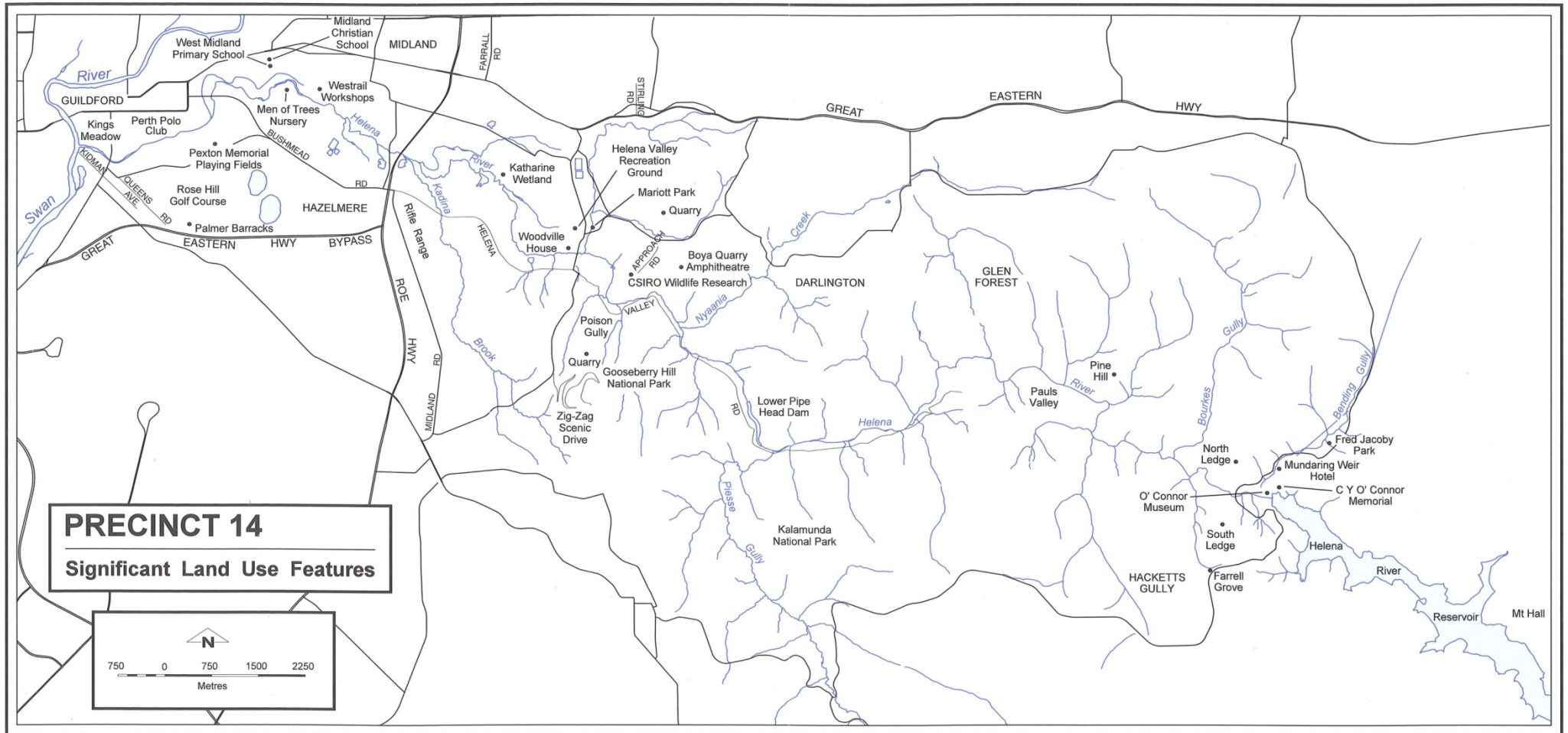
At the confluence of the Swan and Helena Rivers, the King's Meadow recreation reserve occurs on the northern bank. Adjacent is the Guildford Primary School oval which links up to the foreshore reserve. On the eastern side of Johnson Street is the Perth Polo club which is set back from the main flood plain. On the southern bank the Rosehill Golf Course occurs away from the river, however the clubhouse is on the river site of Queens Road West. The building is a restored farm house.

On the southern bank are the Pexton Memorial Playing Fields of Guildford Grammar College.

Helena Valley Recreation ground located along and separated from the river by a road. The area has a sports centre as well as playing fields.

The Mundaring Weir has provided a popular local recreation spot since it was opened early this century. The C.Y. O'Connor Memorial has several information signs explaining the history of the dam site and a memorial to the architect of the scheme. There are several grassed picnic and barbecue areas, lookouts etc. An attractive walk can be taken along the old railway zig zag route which was built by the Lionel White and Company.

The O'Connor Museum is the site of the old pump station number 1 at the base of the Weir. The steam pump station was replaced in 1955 by an electric station. The original pump station was opened as a museum in 1961 and has many interesting displays and equipment. The Mundaring Hall was built in 1908 and was a popular meeting place for members of the local community.



### Public access

Public access to the lower Helena River is restricted in summer by the low flow which makes it not particularly attractive for water sports; however access is possible up to the Great Eastern Highway Bridge. Upstream much of the Helena River is difficult to access due to private property adjoining the narrow river reserve. There is restricted access to the lower pipehead dam.

## Sites of Nyungar & Wider Australian Community Significance

### Nyungar significance

According to Nyungars, the Helena River is fed by numerous springs of 'living water'. There is one Nyungar account which relates the significance of Helena River linking Mundaring (*Mundjallina*) with the Swan River. Another account speaks of the significance of the Helena River between Mundaring and York. These are described below.

According to the Nyungars, the swamp and pools known as *Mundjallina* are located in the deep valley that has since been inundated as result of the construction of the Mundaring Weir. A powerful Waugal associated with rain making lives here.

Nyungars believe that disturbance of the swamp reeds at *Mundjallina* results in cyclonic winds and rain. So feared was this potency that children are not allowed in the vicinity of the swamp.

According to one Nyungar a corroboree ground was located nearby (Quicke, undated). It is believed that Mount Hall and a series of rocky outcrops on the northern side of the reservoir are significant for their association with a Waugal. One story recounts the journey of this Waugal up the course of the Helena River to its source. From here it travelled 18 kilometres overland to York forming the region's rocky hills as it went. A second version recounts how the Waugal formed the course of the lower Helena River from Mundjallina to Guildford. The Helena River was an important travelling route for local Nyungar. It is believed that a corroboree ground exists near the confluence of the Swan and Helena Rivers. The exact location can no longer identified. The Guildford section of the Helena Valley was referred to by Nyungars as Mandoon meaning 'the place of many trees'.

North of the Helena River there is a *winnaitch* or sacred stone at *Beeragunning* which is split down the middle (Bates, 1992). The stone was wide enough for a person to pass through. At the foot of the stone rushes were strewn and Nyungar passing the stone had to pass between it. If they touched either side they would die. Sometimes the stone was 'sulky' or boogur and would close

in. If this happened Nyungars knew that it was time for them to die.

There is a hill on the Helena River a hill is called *Jagoolyoo* with a winnaitch or sacred place here with a stone in the middle of it. Nyungars would sweep this spot and keep it clean. Should they visit this place soon after and find a piece of meat on it they knew their death was eminent as the *janga* or 'spirit' in this stone was eating their flesh (Bates, 1992).

Nyungars probably had several names for the Helena River including Mandoon (Green, 1984). They also had a very detailed list of resting places and localities along the river banks. It is believed that around the 1880s, many Nyungars travelled down the Helena River from York working for the farmers.

It is recorded that on a hill in the Helena Valley, Nyungars built a stone wall about one metre high and 20 metres long. It was built in the form of a snake and orientated north-south directly up the face of the hill. Another similar east-west wall was built at the base of the hill. Both ends of the walls joined up with granite boulders. It is believed that this site was important for initiation ceremonies (Quicke, undated).

Soldier Swamp at Kidman Avenue, South Guildford was used to train young Nyungars in the art of tortoise hunting (O'Conner *et al*, 1989). In the dry season the ground surface dries out. The tortoise dig to the damp mud below and skilled people can identify the disturbances in the mud to locate the tortoise. A ritual procedure would take place before the tortoise was eaten.

There are several records of Nyungar artefacts being found in the area known as 'Wild Horse Hill' and at Beeloo. It is also believed that the area near Army Transport depot was an initiation site and Strathams Quarry and Hazelmere Lakes are mythological sites (O'Conner *et al*, 1989).

The Jacobs family was one of the original Nyungar families which used the area of the Helena River to just below Gingin. At the turn of this century, the family was lead by senior elder's Ted and Les Jacobs and the family still has close connections with the area. (Cedric Jacobs, pers comm).

### Other significance

It is thought that a 19 year old youth named Robert Dale was the first white explorer of the Helena River. It is believed that he named the river after his sister Helen (Quicke, undated).

Kings Meadow Reserve at South Guildford has retained its name from the original subdivisions. Originally, all crown reserve was



marked on the subdivisions as 'King's Meadow'.

Several pools form in the river bed at Darlington and these were used as a local swimming spots.

Poison Gully is a local name for the north-western side of the Gooseberry Hill area which drains into the Helena on the left bank and may have been named after the York Road poison (*Gastrolobium calycinum*) which flourished in the area (Quicke, undated).

Pickering Brook is named after Captain Edward Pickering who had a 3000 acre property from the brook to Darkin River. Pickering never improved his block and he later lost it as he had not met the development requirements of the property allocation scheme..

The first bridge to cross the Helena River was at James Drummond's property quite close to the present South Guildford Bridge. The Helena Bridge was built in 1835 at Guildford but a flood destroyed it in 1862 and a new one was built in 1867 and in 1902. Remains of old piles occur alongside the current bridge.

The Charles Yelverton O'Conner Memorial is located at the Mundaring Weir. It commemorates his life time achievements including the engineering of the Kalgoorlie Water Supply and Fremantle Harbour. The Mundaring Weir itself is a historically significant site, being a monument to the labourers and the engineering feats of early this century.

### Conservation Areas

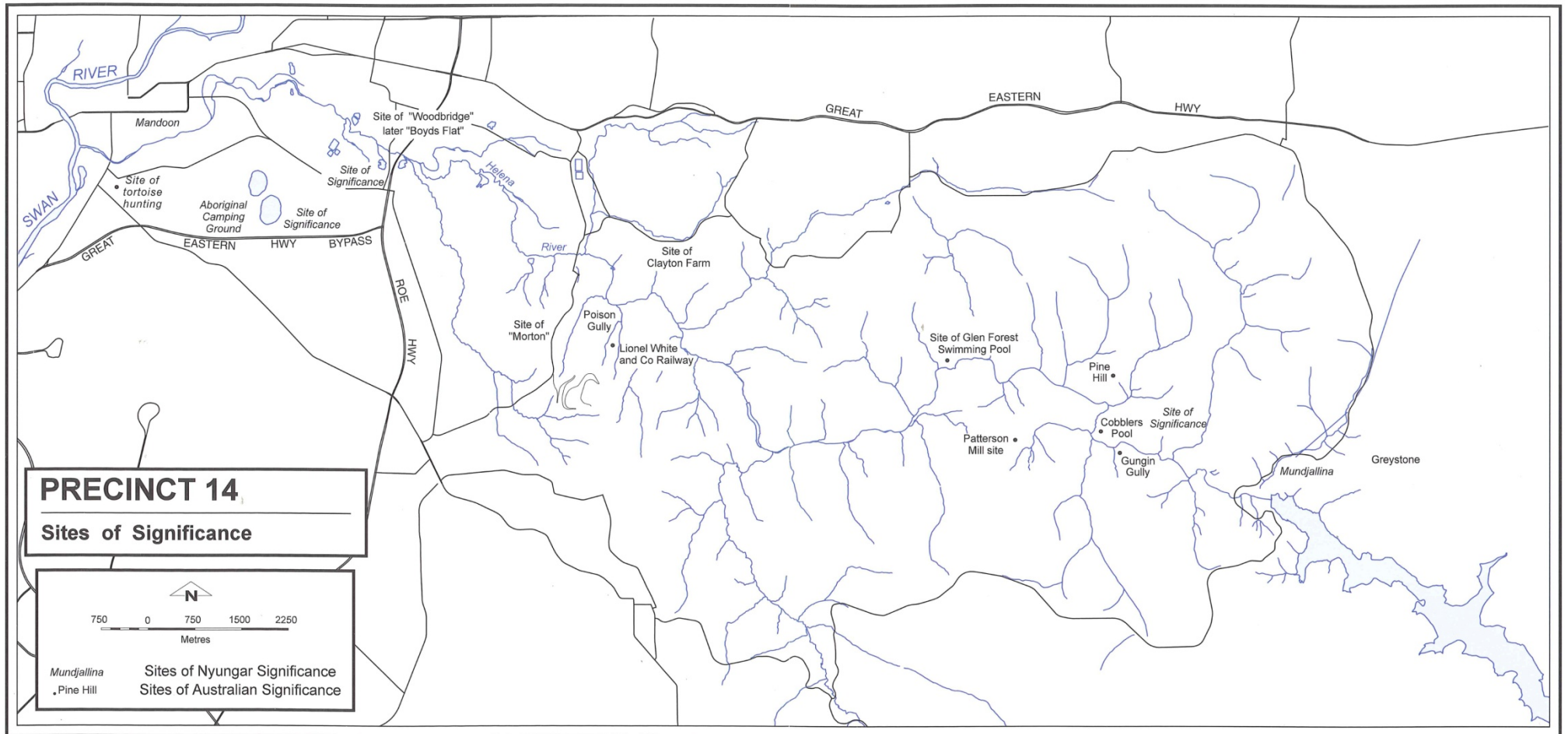
#### System 6

##### *M33 Helena River - Guildford to Darlington*

The recommended area comprises the section of the Helena River from Darlington town site to its confluence with the Swan River at South Guildford. The river banks retain remnants of the natural vegetation, often in the form a single row of trees. In places there are scattered solitary trees and bare stretches, and often the landward margin of the flood plain is better wooded than the river bank itself. The vegetation enhances the landscape significantly. The area is suitable for walking, fishing, bird watching and general enjoyment of the scenery. The area contributes to open space of regional significance. Important management considerations include the need to encourage growth and regeneration of local indigenous flora and controlling stock access to the river banks.

##### *M34 - Helena Valley*

The recommended area includes land which is reserved for Parks and Recreation under the Metropolitan Region Scheme. Public access is restricted by the Public Works Department's Catchment Zone regulations for the Goldfields Water Supply Catchment Area. A range of vegetation types occur in the area and include forest and woodland. The area as a whole has extremely high conservation value for both flora and fauna. Recreation activities within this precinct should therefore be restricted to those which do not diminish its conservation value. It is considered that both conservation of flora and fauna and preservation of water quality are compatible uses. The valley is the only major one close to Perth which is virtually in its natural state and with no major traffic arteries through it. To ensure the protection and enhancement of this valuable open space resource, the management structure of the area requires coordination.



# Landscape Description

---

## Precinct Description

### Waterform and natural riparian zone

In the summer months, the lower Helena River channel is reduced to a series of pools and an exposed dry river bed. The river levees are exposed brown clayey banks and often central islands of clay form as the braided pools dry up. The islands often have riparian vegetation including paperbark and reeds as well as exotic grasses. In summer, the river channel is only one to five metres across while in the winter months the waters swell to fill the entire flood plain which at maximum is 100-200 metres across. Around the Hazelmere and Midland areas, several wetlands have formed adjacent to the river and are fed by both natural and artificial drainage lines. As the topography increases towards the Darling Range, the river channel is reduced to a small gravelly gully within the steeply sloping valley. Where the fringing vegetation is less dense, it is often possible to view the small waterfalls and eddies created by the disturbance of the water over protruding granite rocks. In summer, these rocks often act as barriers to the reduced flow and small discontinuous pools form. As the Helena River passes through Paulls Valley, the river bifurcates several times forming small islands in the centre of the channel.

There are several tributaries which enter the lower Helena River which are mainly ephemeral and are reduced to shallow gullies. There are several tributaries which enter the Mundaring Weir outside of the precinct. These feed the spectacular reservoir which floods the Helena Valley. The lake is long, narrow and with an irregular shape caused by surrounding hilly topography jutting as spurs into the lake. The reservoir levees highlight the water's edge and the dusty green grey of the surrounding woodland vegetation by forming a dramatic outline of unvegetated orange gravel and boulders.

### Landform

The Helena River passes through a range of landforms creating an interesting landscape. At the base of the Helena River, the flat fluvial plains spread out from the river channel. In places, the plains appear gently undulating reminiscent of the aeolian blown dunes. In front of the Darling Range, the landform becomes more undulating as the dominant topography becomes the ridge hill shelf.

The lateritised foothills are the fluvial terraces which spread out in fan like plains at the base of the Scarp. From a distance, a viewer can identify the separate fans in front the river valleys of the Darling Scarp. The Darling Range forms an almost linear belt of lateritic uplands and scarp which are interrupted by deep valleys.

## Vegetation

At the confluence of the Helena River with the Swan River, the fringing vegetation has been degraded by clearing. The riparian vegetation is dominated by bulrush and exotic grasses. On slightly higher land, fringing paper bark provides a soft dusty rounded outline along the river bank. The swamp sheoak has a dull green foliage and irregularly shaped branches. At the lower Helena River, the sheoak is often on the edge of the river channel with the several branches hanging over the water. The flooded gum also is often found overhanging the water's edge, however there are several remnant trees along Queens Road which are quite spectacular for their size and graceful spreading branches. The surrounding flatlands have a few remnant moonah and kondil on the sandier undulating plains. The moonah has thick twisting branches and soft clumps of foliage and makes a very attractive tree. The kondil is a tall regularly branched sheoak which is often found as a sole remnant tree in the lower areas. The original understorey has mostly been cleared for grazing and other land uses. Grasses and exotic weeds now flourish in the area. The natural riparian vegetation remains in some of the backwaters and small wetlands around the Hazelmere area, however despite the dense coverage there is still a lot of weeds.

On the lower plains, the woodlands of marri, jarrah, wandoo and banksia species have generally been cleared for other land uses, however remnant communities occur particularly on the larger semi rural properties or on industrial land which has a vegetation buffer. Weeds flourishing along the river banks include prominent species such as castor oil and bulrush. On the Ridge Hill Shelf, a greater amount of indigenous overstorey remains due to the unsuitability of much of the land for agricultural land uses. In this gravelly soil, the pale bark and loose open foliage of the wandoo and the graceful dense foliage of the Darling Range ghost gum are particularly attractive features. Interspersed in the community there is the irregularly curved shape of the marri, and in places the understorey is quite dense with prickly bushes and other small shrubs.

In the valley between the lower pipe head dam and the Mundaring Weir the vegetation is dominated by marri, jarrah and wandoo open woodland as well as sections of heath and herblands. This is an attractive woodland with the dominant trees having much darker bark-and foliage than those of the downstream section. On the higher ground around the Mundaring weir the vegetation community is similar to the valley community, however interspersed with the marri, jarrah and wandoo are the large tall and regularly branched blackbutt trees. Around the Weir, the understorey is in relatively good condition with layers of shrubs and bushes being continuous.

At the weir, there is an interesting contrast to the indigenous woodland with the planting of exotic trees such as pines and conifers. Isolated specimens of blue green and rich bright green foliage stand out, against the comparatively olive green of the surrounding eucalypt woodland.

### Riparian land use

At the confluence of the Helena River there is the Kings Meadow recreation reserve and the adjoining Perth Polo Club both of which are open fields with a thin line of riparian vegetation. On the opposite bank, there is a section of river reserve which was originally used for pastoral purposes, and as a consequence the riparian land appears very weedy. Plexton Memorial Playing Fields owned by Guildford Grammar extend from the foreshore to Queens West Road. The fields are partly inundated during high flow periods and a small wetland occurs on the north-western corner.

The Great Eastern Highway bridge at South Guildford is a wooden pile bridge which has white wooden railings. On the western side of the bridge are two water pipelines which have been graffitied. There is a footbridge at Hazelmere which allows access to the West Midland Primary School and Midland Christian School from the surrounding suburb. Several small traffic bridges cross the river at Midland; these are all small low formed wooden structures, except for the Roe Highway bridge which has a concrete and steel superstructure with wide piles suitable for carrying heavy traffic loads. A railway bridge occurs at Midland which extends from through Middle Swan across the Helena River and towards Kewdale.

Upstream of Approach Road, Darlington, there is little direct riparian land use until the lower pipe head dam. The river channel at the downstream section of the dam is often dry in low flow periods. In the upper section, the water forms behind the dam filling the river channel and flood plains. The pipeline which carries the water to the Mundaring Weir crosses to the south side of the narrow Helena River channel upstream of the small reservoir.

### Land use

On the eastern and western sides of Great Eastern Highway at South Guildford, a narrow belt of urban development includes residential properties and a small ribbon of commercial land use. The retail ribbon has a vague reference to the Federation style houses, with lace trimmed corrugated iron verandahs. The houses in this area are mixed in age and style although most were built more than fifty years ago. The houses on the northern section are predominantly Federation cottages which have

mainly been renovated in keeping with their original designs. Cottage gardens and mature exotic trees dominate the skyline. There are several mature eucalypts within the residential areas. Guildford Primary School is located on the northern bank adjacent to the Swan and Helena River confluence. The school's ovals link to the adjacent river reserve and wetland.

On Queens Roads West, the land is used for grazing. It is reminiscent of the past land use of the entire Helena River. The fields extend to the belt of riparian vegetation which fringes the river foreshore. Several mature flooded gum remain within the fields providing a parkland type landscape. Further upstream there is the Rose Hill Golf Course which was developed in the early 1990s on the southern side of Queens West Road. The clubhouse and parking is on the river side of the road. The clubhouse is a refurbished house which helps link the past farming land uses with the new land uses. The golf course has required reshaping of the landform into undulating hillocks which have bright green turf. This sharply contrasts with the surrounding flat landform. Associated with the golf course, a new residential development is currently being built. The styles have 'Federation' and 'Tuscan' elements which are currently popular with new home styles. Most blocks are quite small and all have 'landscaped' gardens and lawns. Few have native flora.

A poultry farm located on the southern bank of the river is indicative of what was once predominantly rural land use. The farm has several sheds which are partly screened by a private residence and garden. The Men of Trees nursery is located in a depression at Stirling Crescent. It consists of several low formed shade houses and other growing areas. The site includes a wetland area. Opposite on the northern bank, there is West Midland Primary School and Midland Christian School which are separated from the Helena River and riparian vegetation by a road.

The old Midland Westrail workshops have been closed and a decision is currently being made on how the workshop site is to be used. At present, the old wooden and asbestos workshops are derelict and remains of the tracks are still present in the concreted yard. Upstream, the land use around the river becomes light industrial and includes car repair yards, scrap yards, drying sheds, stockyards and Midland brick yards.

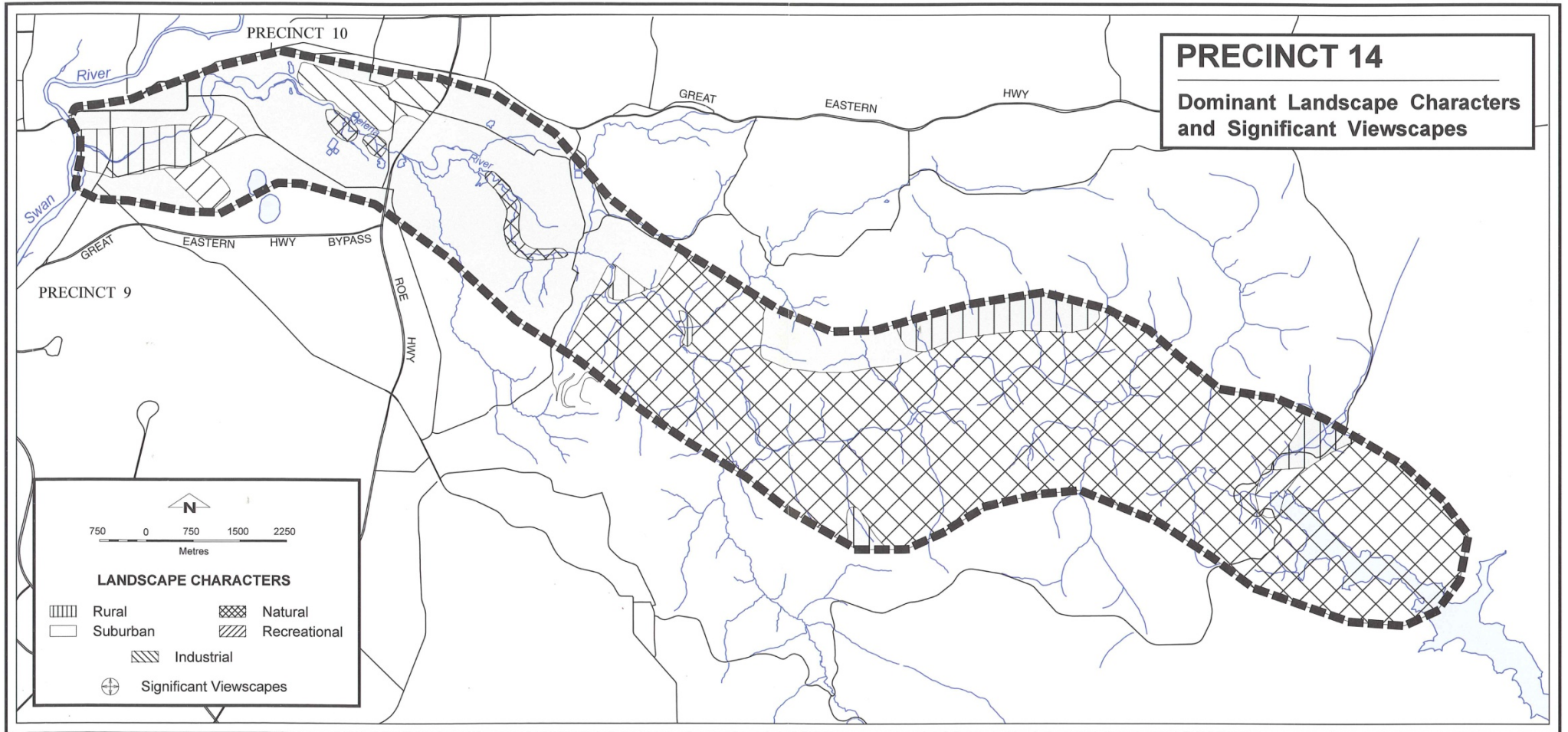
Two prominent residential housing estates are located in the Helena Valley. They have been built on land which was previously rural land use. The houses have been built in the 1990s and are generally similar in style to the Rosehill area; however there are more corrugated metal roofs and more natural brick colours. Some remnant vegetation still remains on the subdivision.

Further upstream, riverside rural blocks occur in the valley. The houses are typically styled as small homesteads, although some are more suburban in style. The properties are generally mostly cleared for grazing and small horse agistments. Many have water tanks and sheds which reinforce the rural land use. Most properties extend to the river which has a mature riparian vegetation community. Grazing and rural activities have introduced a high number of weed species into the river area.

One of the features from the distance is the several pine plantations such as the Fred Jacoby Park plantation. These provide a dramatic contrast in colour and texture to the surrounding marri and jarrah forest. The plantations are on the higher topography and provide a backdrop to some views of the Helena River.

The above ground pipeline which carries the water from the Mundaring pump houses to the goldfields are a characteristic land use in the area. The silver pipes run directly up the steep valleys and often glint through the forested areas.

The Mundaring Weir is a spectacular feature in the landscape. The reservoir is a great expanse of water, the end of which is out of view from the weir due to the nature of the surrounding topography. The weir is constructed as a massive slope of concrete which stretches across the valley floor. Some of the concrete supports are built into a granite rocky outcrop which is located on the southern bank. The concrete is stained in black on the western face. The streaking reduces the impact of the large concrete barrier by adding an interesting texture to what would originally have been a uniform grey concrete slope. The old water gauge station on top of the weir is an attractive Federation styled building. It is a little round building with a dome roof and finial ornament. The station has recently been painted pale blue and cream which makes it a rather whimsical feature on the landscape. Although it appears rather delicate surrounded by the concrete wall, the deep reservoir and surrounding dramatic Darling Range, the gauge station is an important key landscape element which immediately allows the viewer to identify the Mundaring Weir. The C.Y. O'Connor Memorial gardens extend the Federation landscape, as the original designers constructed walkways and viewing platforms and planted exotic gardens on the hillside for picnickers. The gardens are still a popular attraction for their classical design which is in sharp contrast to the marri and jarrah surrounding forests. At the base of the weir is the original number one pumping station. The pump station is an attractive example of the Federation industrial buildings. The red brick building has arches and brickwork which are characteristic style elements of this time. The original steam chimney is also made of red brick and is a strong vertical element in the valley.



# Landscape Interpretation

---

## Dominant Landscape Character

The original landscape for the Helena River would have been a transect of landscape types across most of the Swan Coastal Plain. The immediate landscape around Darlington would have been the natural landscape characterised by alluvial deposits predominantly covered by melaleuca-sheoak and sedges. Upstream from Darlington to the Mundaring Dam, the original landscape would have been the Darling Range Landscape ranging from eucalyptus woodlands on the deeper soils and low heathlands on the shallow soils.

At present, there are only a few limited Natural Landscapes west of Midland. These only appear natural in the immediate viewscape and the surrounding suburban and industrial landscapes infringe on the viewscape. The industrial landscape at Midland is composed of numerous workshops and small businesses. Many of the workshops are converted residential buildings. The suburban landscape is increasingly dominating the Helena River with only small sections of parkland. The suburban landscape in most sections dominates the entire riparian area as the Helena River is so narrow that the waterform is often not apparent except in the immediate vicinity.

There are patches of rural landscape upstream of the Helena River which is easily identifiable as intensive agricultural areas such as orchards and market gardens. In addition, several properties are hobby farms and horse agistment. Together, they have cleared land and relatively wide spaces between residential properties. Increasing pressure for subdivision is changing these properties to suburban landscapes with higher density housing. Below the Mundaring Dam, there are large sections of bushland which appear to be relatively natural despite heavy infestation with weeds.

## Significant Viewsapes

One of the most significant viewsapes is the panoramic view from Mundaring Weir. From the pedestrian walkway of the weir and the viewing points at either end there is a spectacular view of the dam itself and the surrounding forested water catchment area. There are also several of the historic water pump buildings in the viewscape. Downstream from the dam, there are several areas where the waterform and relatively natural vegetation provide an attractive viewscape. The confluence of the Swan and Helena Rivers has potential to be a significant viewscape in the precinct if foreshore vegetation was improved in the landscape.

## Conforming and Non Conforming Elements in the Landscape

The industrial and suburban landscape intrudes into the very limited natural landscape of the riparian area around Midland.

One of the distinguishing features of the Guildford area is the number of older cottages and Federation styled houses. These have a mixture of exotic gardens and there are several mature eucalyptus in the gardens. When planning for urban development in this landscape there is the opportunity to consider the historic elements which make Guildford a distinctive landscape.

There are a few rural landscapes in the precinct. These elements stand out from the surrounding bushland with cleared blocks and intensive horticulture including small orchards. Several hobby farms and horse agistments are important elements in this limited landscape. Subdivisions are increasingly altering these landscapes to a suburban landscape.

The Mundaring Weir is a spectacular intrusion in the landscape. The dam has flooded the upper reaches of the Helena Valley and due to water quality requirements the immediate catchment remains uncleared. The collected water forms a broad lake surrounded by eucalyptus woodland. The waterform is unnatural in this landscape type, but it is attractive to most viewers.

## Recommendations for Maintenance and Enhancement of the Present Landscape Character

- Enhance the natural riparian vegetation especially at the lower reaches of the Helena River where urban influences have reduced the quality and distribution of natural communities.
- Consider the opportunities which the distinctive Guildford suburban landscape offers. Consider if new developments should conform, complement or stand out from this historic landscape.
- Consider the historic nature of the Mundaring Weir and surrounding buildings when planning land use and developments.
- Consider the attractiveness of the natural vegetation and rural landscape character which considering development proposals.
- Consider the steeply sloping nature of the upper section of the precinct and ensure that development designs do not detract from this geomorphology.

# Precinct Specific References

---

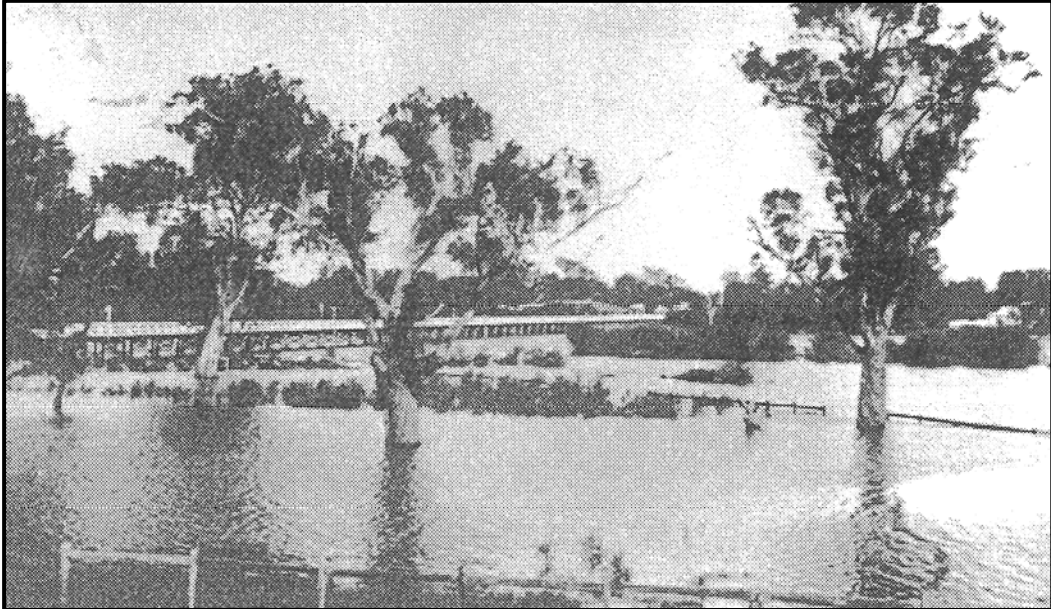
Quicke, E. undated. **The Helena Story**. Typed Manuscript.

WAWA. undated. Kalgoorlie Water Supply. Pamphlet.

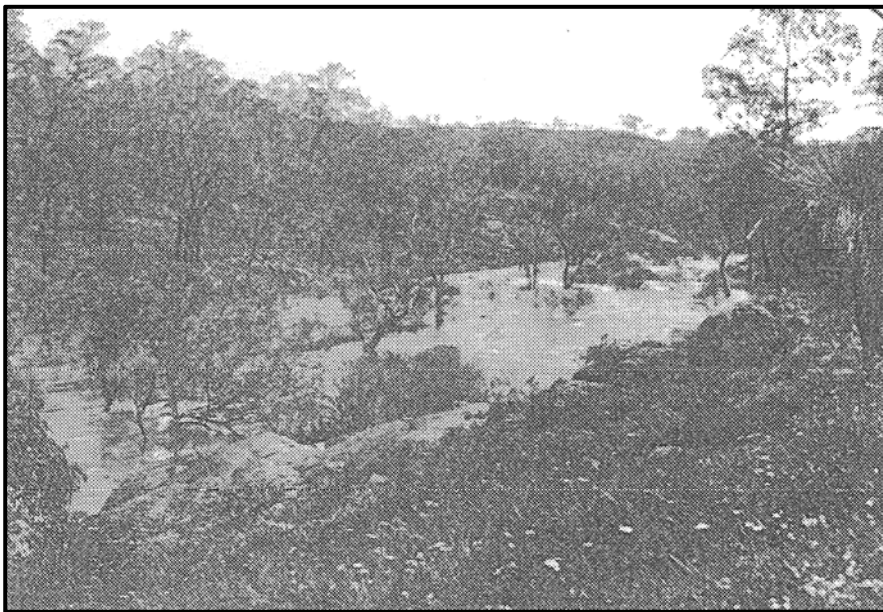
Water Authority of Western Australia. 1992.

**Lower Helena Catchment Management. Strategies to Reduce the Risks of Pollution from Private Land.** Report WS 94.





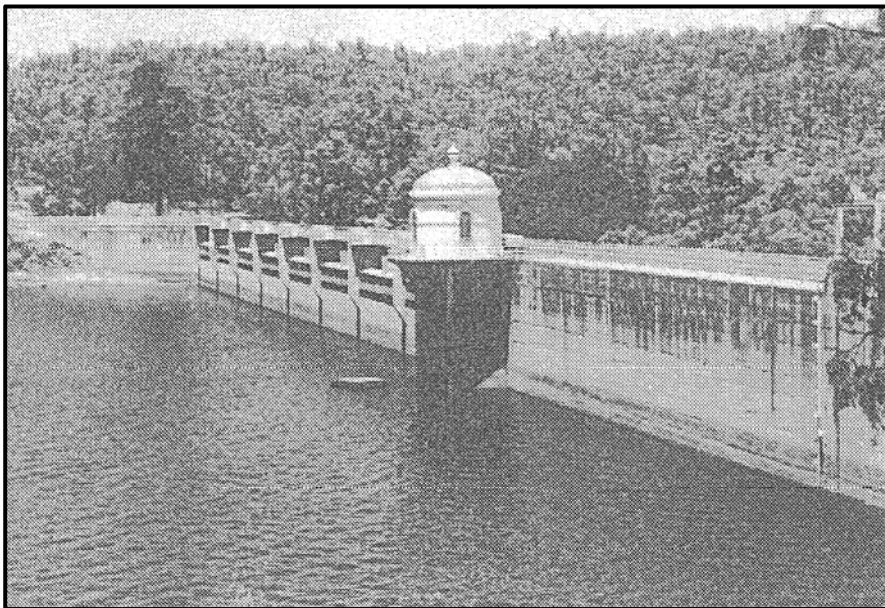
Helena River Bridge, Guildford, 1910.  
Battye Library 52612P.



Helena River, Darlington, 1904.  
Battye Library 10072P.



Helena River, Guildford. 1995. Swan River Trust.



Helena River, Guildford. 1995. Swan River Trust.